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## Taiwan

### BIOFUELS ANNUAL

## Taiwan Mandates One Percent Biodiesel

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**Report Highlights:**

In 2008, Taiwan backed off from its plans to develop local biofuel feed stock production in response to historically high grain prices that triggered a global food crisis. Taiwan is now focusing on cellulosic feed stock, which grows better on marginal land and will not compete with food crops on arable land. There are ongoing collaborative research projects in cellulosic feed stock, which may contribute to development of biofuel technology and cultivars.

In July 2008, Taiwan started to implement a one percent biodiesel usage policy that requires all gas stations on Taiwan to supply B1 diesel for motor fuel. Taiwan's demand for B100 to meet the B1 mandate is estimated at 45,000 kiloliters per year, of which approximately one third is likely to be met by imports from the EU. Taiwan uses recycled cooking oil to make B100, and its B100 production capacity is 99,000 kiloliters, double the previous year. Taiwan has tentatively set its goal to implement B2 mandate for motor fuel in 2010 and B5 mandate in 2015.

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### **Executive Summary:**

Taiwan has reduced local feedstock production for biofuels but is still maintaining consumption targets. While Taiwan does have some local biodiesel production capacity, and is researching cellulosic biofuels, the new policy change will turn Taiwan into a significant importer of biofuel ethanol and B100 biodiesel over the next few years. In the future, Taiwan's impressive tropical agriculture research sector should be able to develop breakthrough cellulosic biofuel technologies.

Taiwan has mandated the use of B1 biodiesel in motor fuels beginning in July 2008. However, approximately one third of its B100 demand is likely to be met by imports that can offer more competitive pricing than domestic suppliers. All B100 biodiesel marketed in Taiwan, whether imported or domestically manufactured, should meet the national standard CNS15072, while blended biodiesel for motor fuel should meet standard CNS1474.

Taiwan has set a goal to mandate E3 gasohol to replace MTBE in 2011. In an effort to move this goal forward all government vehicles owned by the central government and the Taipei municipal government would be required to use E3 gasohol and all service stations in Taiwan's two main cities of Taipei and Kaohsiung would be required to offer E3, followed by other cities and counties by 2011. Taiwan does not yet have ethanol production plants and anticipates being import dependent. Taiwan established its national standard for biofuel ethanol -CNS15109 - in June 2007. So far there are eight gas stations in Taipei City and five gas stations in Kaohsiung City that supply E3 gasohol motor fuels.

Taiwan is revising its energy regulations and policies to reach goals of reducing carbon emissions and developing renewable energy, including biofuel MOEABOE, in an effort to reduce its dependency on fossil fuel.

### Taiwan's Oil Demands

Taiwan's demand for crude oil is met by imports and 1.2 million barrels of crude oil are consumed per day on average. Approximately 98 percent of the island's energy supplies are imported. According to Bureau of Energy statistics, Taiwan's annual motor vehicle demand for petrol gasoline was 9.5 million Kiloliters and 4.5 million Kiloliters for petrol diesel in 2008. There was a five percent decrease in Taiwan's demand for petrol gasoline and diesel between 2007 and 2008, due mainly to high costs of fossil fuels and the willingness of people to adopt more environmentally friendly modes of transportation.

### Domestic oil prices:

As of May 30<sup>th</sup>, 2009, retail gasoline prices in Taiwan were NT\$28.70/liter for 98 unleaded; NT\$27.10/liter 95 for unleaded; NT\$26.40/liter for 92 unleaded, NT\$22.90/liter for regular diesel; and NT\$23.40/liter for premium diesel.. These prices are regularly reviewed and adjusted weekly to reflect current world crude oil prices.

### Exchange rates:

The current exchange rate is US\$1 = NT\$32.60, quoted on 06/03/2009, compared to NT\$30.22

the same date of last year and NT\$32.55 on average for the period March 2008-April 2009. The local currency started appreciating against the U.S. dollar from the recent monthly high of NT\$35.00 in February 2009, according to Central Bank of Taiwan statistics for spot exchange rates.

## **Author Defined:**

### **I. Situation and Outlook - Government Biofuels Policy**

#### **Energy Crops**

In the middle of 2008 as Taiwan's new administration took office, Taiwan halted its policy on reviving set-aside paddy fields for biofuel feed stock production when world grain prices reached record highs and global food crisis concerns were continuing to escalate. Government supported research projects on fuel ethanol produced from sugarcane, sweet potato and sorghum were discontinued. Taiwan also discontinued small contract biofuel oilseeds production for local B100 production. However, Taiwan is continuing to conduct extensive research on biofuels with a new focus on cellulosic or agricultural wastes feed stocks. There are ongoing multilateral collaborative research projects on the use of Miscanthus in cellulosic biofuel ethanol production and indigenous grasses. Taiwan is also conducting research on the potential biofuel ethanol production from certain types of seaweed.

#### **Biodiesel**

Last year, Taiwan announced its one percent mandate for biodiesel in motor fuel, effective since July 2008. According to the Taiwan energy authority, the Bureau of Energy under the Ministry of Economic Affairs (MOEABOE), Taiwan's annual demand for B100 is estimated at 45,000 kiloliters of which one third is likely supplied by the EU. Taiwan doubled its B100 biodiesel production capacity to 99,000 kiloliters from nine registered processing plants, compared to 45,000 kiloliters from five processing plants in 2008. Currently, Taiwan primarily uses recycled cooking oil to make B100. Taiwan is confident in its ability to meet current B1 needs and future B2 mandates. Taiwan is expected to mandate the usage of B5 by 2015.

Taiwan has published its national standards CNS15072 for biodiesel B100 and CNS1471 for motor diesel fuel. All biodiesels traded on the Taiwan market are required to meet these standards. Copies of the standards can be ordered from the Bureau of Standards, Metrology and Inspection, Ministry of Economic Affairs (BSMI/MOEA). Its website is at <http://www.bsmi.gov.tw>.

According to the Taiwan Customs Tariff Office, the tariff rate for B100 biodiesel entering under HS3824.9099.90.2 is 5 percent.

#### **Gasohol**

Taiwan established eight demonstration E3 gasohol gas stations in Taipei City last year and added another five demo gas stations in Kaohsiung City this year. The Ministry of Economic

Affairs, Bureau of Energy (MOEABOE) has completed a survey on motor vehicles for the types and models of engines to see whether existing motor engines can be fueled using E3 gasohol. The survey results indicate that almost 100% of existing motor vehicles on Taiwan roads can be fueled with E3 gasohol. However, there are some 10 million motorcycles built before in Taiwan whose engines cannot be fueled with E3 gasohol.

In June, 2007 Taiwan established national standards for biofuel ethanol, CNS 15109 for fuel ethanol and CNS 12614 for gasohol. All biofuel ethanol and gasohol traded on the Taiwan market will be required to meet these standards.

The fuel ethanol imports are likely to fall under the HS2207.2090.004 with a 20 percent tariff rate. Taiwan's potential ethanol imports are estimated at 300,000 kiloliters for Taiwan to meet its E3 gasohol mandates.

### **Energy Regulatory System**

Although Taiwan is not a signatory member to the Kyoto Protocol, it has tried to follow global trends in greenhouse gas emission reduction and renewable energy development. At the National Energy Conference held in April 2009, there were many discussions on Taiwan's regulatory system for renewable energy, greenhouse gas emission-reduction, and energy tax reform. The conference resolved to urge Taiwan authorities to promote renewable energy, green industries and to pass the proposed Renewable Energy Development Bill and Energy Tax Bill.

The Ma Ying-jeou Administration pledged to pass the proposed Renewable Energy Development Bill, which has been pending for six years, during the current legislative session ending on June 16, and to reduce emissions to 2008 levels by 2020 and to half of 2000 levels by 2050.

### **Trade Policy**

Imports of biofuels are subject to the current import regulations on petroleum and products under the Petroleum Act. Manufacturers and sellers of biofuels are required to follow the same rules as those marketing petroleum products.

## **II. Statistics and Analysis**

### **Production, Consumption and Trade (Biodiesel)**

The total demand for B100 for the B1 mandate is estimated at 45,000 kiloliters, of which two thirds is from domestic suppliers. Taiwan's B100 production capacity is estimated at 99,000 kiloliters, which is sufficient to meet the anticipated B2 mandate in 2010. Taiwan currently imports some B100 from the EU, but does not import B99 from the United States, according to the local industry and MOEABOE.

### **Production, Consumption and Trade (Biofuel ethanol)**

Current E3 biofuel ethanol consumption is minimal and only available at 13 demonstration gas stations located in Taipei and Kaohsiung. All biofuel ethanol is imported, as Taiwan does not currently produce biofuel ethanol.

